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Forest Development Opportunities
in North Central Mississippi

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FOREST DEVELOPMENT OPPORTUNITIES
in
NORTH CENTRAL MISSISSIPPI

* * * *

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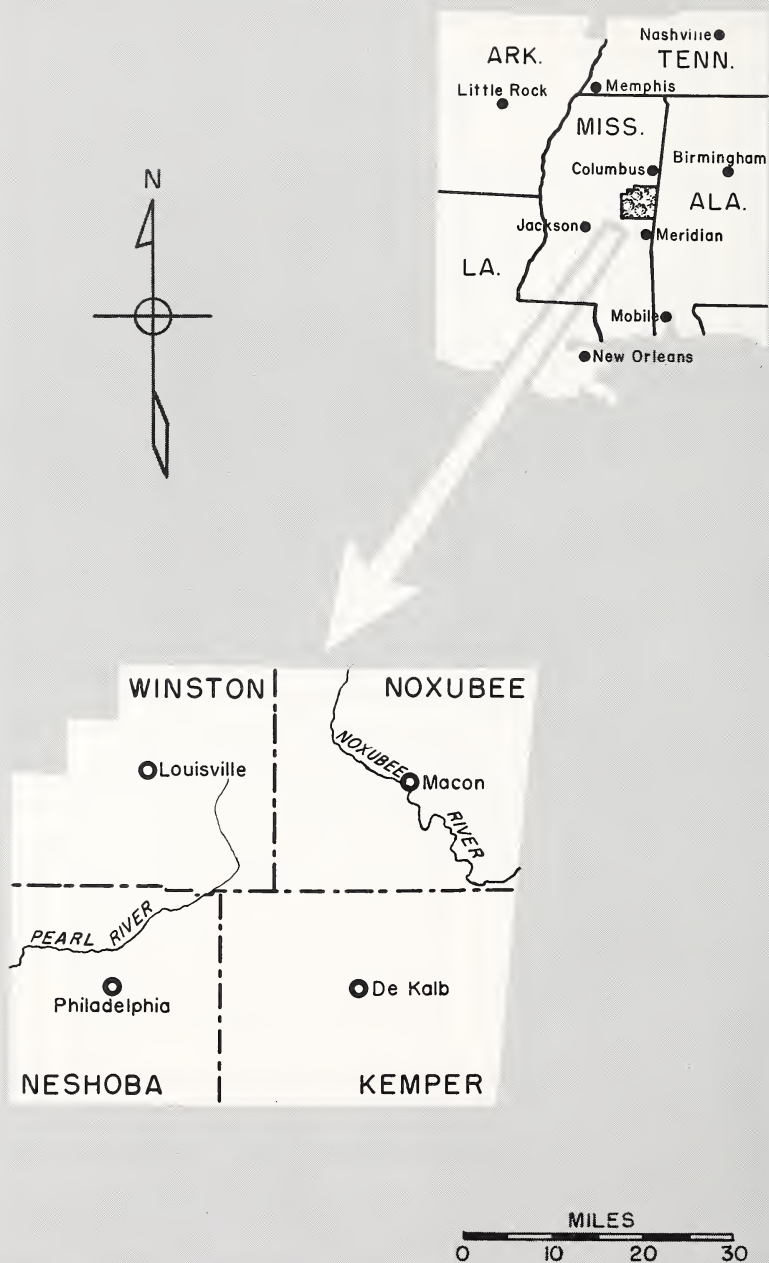


Figure 1.—North central Mississippi counties.

TIMBER: KEY TO A VIGOROUS LOCAL ECONOMY

This study shows how development of the forests could greatly strengthen the local economy of four counties in north central Mississippi—Kemper, Neshoba, Noxubee, and Winston. The conclusions and recommendations may also be widely applicable in neighboring counties that share similar timberland problems and opportunities.

Lack of resources to sustain current levels of population is perhaps the key problem in this 4-county area (fig. 1). Developing the full productive capacity of the forests would not only increase the generally low income of the predominantly rural population, but would also enable the area to provide a better livelihood for an even greater population.

Urgent need for cash frequently creates heavy pressure on landowners to liquidate timber as soon as the minimum salable volume develops. Such harvesting methods, repeated a few times, reduce timber income to a mere fraction of a dollar per acre annually. In turn, poor and infrequent timber returns discourage investment in forest management.

It takes time and money to rebuild depleted timber stands. And in this area depletion has progressed so far that the cost of remedial action exceeds the funds available to most individual landowners. The problem is further complicated by the large number of woodland owners—some 9,100—and the small size of individual tracts. Thus, broad-scale public and private measures may be needed to assist landowners in rehabilitating their stands. Expansion of markets and local industry is also needed to permit use of more low-grade material, as well as to expand employment opportunities.

Though the forest betterment task is sizeable, the effort is well worth making. North central Mississippi lies in one of the Nation's inherently most productive forest zones. Despite heavy timber use and slowness to appreciate the possibilities of trees as a crop, much economic activity, directly or indirectly, still arises from the forests.

A higher sustained level of forest management in the area is eminently in the public interest. Locally this would mean increased payrolls and income. Additionally, the well-documented present and future need of the Nation for timber puts a premium on high levels of forest productivity to supply expanding markets. After a very thorough appraisal of prospective timber needs, the Forest Service



estimates that the Nation will require at least 30 percent more wood by 1975, and almost twice the present volume by the turn of the century. Only with full development of potentially productive forest lands, such as those in the area under consideration, can these needs be met.

NORTH CENTRAL MISSISSIPPI: THE SETTING ¹

Recent population statistics in north central Mississippi largely indicate emigration—the flight of workers toward the more rewarding employment they hope to find elsewhere. Population declined 15 percent between 1940 and 1950 and another 15 percent—to 71 thousand—between 1950 and 1958.

Associated with population changes have been notable shifts in land use. Number of farms dropped from 15.5 thousand in 1940 to 11.4 thousand in 1954. At the same time, average farm size rose to 104 acres, a 42-percent increase. In addition to consolidating their holdings, farmers have been releasing from cultivation acreage that is eroded or in other ways submarginal. On farms reporting woodlands, forested area rose from 46 to 76 acres between 1939 and 1954.

Field crops still provide most of the farmer's cash receipts. Nearly half the farms are essentially cotton-growing enterprises, and many of the others raise some cotton. Value of farm products sold in 1954, according to the latest Census of Agriculture, totaled some \$13.5 million, a 26-percent increase since 1949. Of 1954 product value, more than \$8 million was attributable to field crops, chiefly cotton; livestock and livestock products accounted for nearly \$5 million; and forest products cut on farms (including standing timber) amounted to \$0.5 million.

Farm income is being increasingly supplemented by outside employment. Proportion of farmers reporting off-farm work of 100 days or more totaled 7 percent in 1939, 16 percent in 1949, and 22 percent in 1954. Nearly one-third of the farm families received more than half of their 1954 income from other sources than farm products.

¹Statistical material in this section is drawn largely from the following sources: (1) Various reports on population, agriculture, and manufactures issued by the Bureau of the Census, U. S. Department of Commerce. (2) *County Business Patterns, First Quarter, 1956*. U. S. Department of Commerce; U. S. Department of Health, Education, and Welfare. 1958. (3) *Estimated Population Trends in Mississippi 1950-58*. Agricultural Experiment Station, Mississippi State University. 1959. (4) *Personal Income in Mississippi Counties*. Bureau of Business Research, University of Mississippi. 1957. (5) *Income Structure of Mississippi Counties*. Bureau of Business Research, University of Mississippi. 1957.



Growth of non-farm employment is in many respects a healthy development. Much of the increase in income from off-farm work no doubt goes into needed capital improvements that raise the productivity and income of labor in agriculture.

Manufacturing—particularly in forest-based enterprises—contributes significantly to non-farm employment. In the first quarter of 1956, for example, over half of the 2,600 manufacturing employees covered by old-age and survivor insurance worked in lumber and other wood-products industries. About two-thirds of the 80 manufacturing establishments reported by the 1954 census were lumber and wood-products firms; most of the remainder were small food-products establishments, such as milk-processing plants. In this year, total value created by manufacturing was \$11 million, of which some \$6 million might be attributed to forest-based industries.

More illuminating than total values, however, are per-capita income estimates developed by the University of Mississippi Bureau of Business Research. Estimated 1954 income ranged from \$394 in Kemper County to \$589 in Winston County; the regional average was about \$540. (While the incomes of land-owning families may be better than average, they are still likely to be relatively low.) No county had a per-capita income as high as the State average of \$850 (fig. 2). Of civilian participation income,² some 32 percent was attributable to

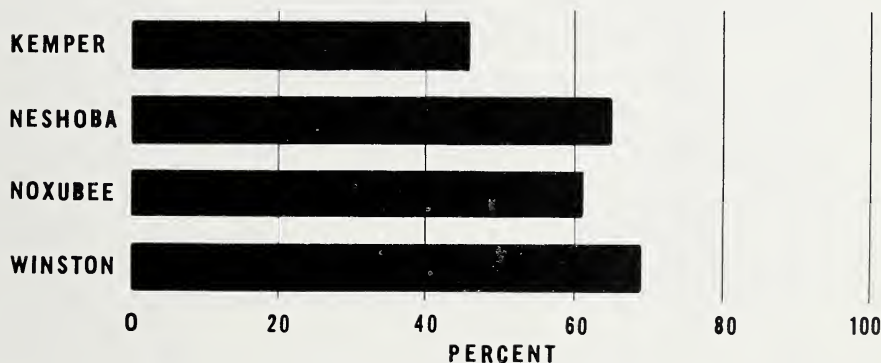


Figure 2.—Per-capita income in north central Mississippi counties relative to State average.

² Civilian participation income includes wage and salary disbursements, proprietors' income, and other labor income but excludes property income, transfer payments, and pay of military personnel.

← The D. L. Fair Lumber Company at Louisville provides year-round employment for hundreds of local residents.



farming, 16 percent to manufacturing, 27 percent to trades and services, 15 percent to government, and 10 percent to miscellaneous sources. Though the Bureau did not separate the component directly and indirectly attributable to timber products, it is estimated to be more than one-third of the total. This includes the values from timber products arising in trades, services, transportation, government, and the like, as well as the direct returns.

More favorable adjustment of people to resources might seem implicit in recent economic trends. But there is room to doubt that the decline in population is necessarily favorable. Dr. Harald Pedersen, formerly Professor of Sociology at Mississippi State College, has shown that it is chiefly Mississippi's young people who migrate. In effect, the 4 counties have been investing heavily in the rearing and education of youths for productive adulthood elsewhere. Though some migration may be desirable, the community needs to retain its share of these potential leaders.

It bears stressing that low income is not solely a problem in forestry. It is also a problem in agriculture, industry, and indeed, of the whole regional economy. To expand employment and investment opportunities, therefore, is not a small order. Economic development, which is subject to public and private business policies on a broad front, must have as its goal the raising of incomes—through the medium of all resources including forests.

THE FOREST RESOURCE

North central Mississippi is extensively wooded. Nearly six out of every ten acres of land bear forest growth. The proportion of forest land varies somewhat from one county to the other. It is highest, 69 percent, in Kemper County; lowest, 48 percent, in Noxubee. The forests are characterized by young timber—that is, second-growth stands that have arisen since the original timber was cut over. Loblolly and shortleaf pines in varying mixture with hardwoods, mainly upland oaks and hickory, dominate most of the forest area. Along waterways, such as the Pearl River and its tributaries, are stands of pure hardwoods—chiefly bottom-land oaks and gum.

Forest Area Is Increasing.—Land clearing for agriculture, urban expansion, and other uses during the past two decades has been over-

← *The bottom lands along the Pearl River and other local waterways are well suited to growing industrial hardwoods.*

shadowed by reversion of farmlands to forest. In 1935, forests occupied 882,300 acres; in 1947, 940,500 acres; and in 1957, 990,500 acres. Today woodlands cover 59 percent of the land.³

The trend toward conversion of farmlands to forest, at a rate in excess of localized land clearing, has been heaviest in the eastern part of the region (Kemper and Noxubee Counties). Here, forest area has increased 21 percent since 1935; in the two western counties it has risen some 4 percent.

In these 4 counties, the net result of the shifting land-use pattern is that present forest area is 12 percent greater than in 1935, when the initial forest survey was made. At this rate, forest area is extending at an average of nearly 5,000 acres annually.

More Pine Timber.—Growing stock—which includes sound, well-formed trees at least 5.0 inches in diameter—totals 536 million cubic feet in north central Mississippi, or about 540 cubic feet (nearly 8 cords) per acre. Softwood, virtually all southern pine, makes up 241 million; hardwood, 295 million. The trees large enough for sawtimber contain 1.7 billion board feet,⁴ of which nearly three-fifths is pine (fig. 3).

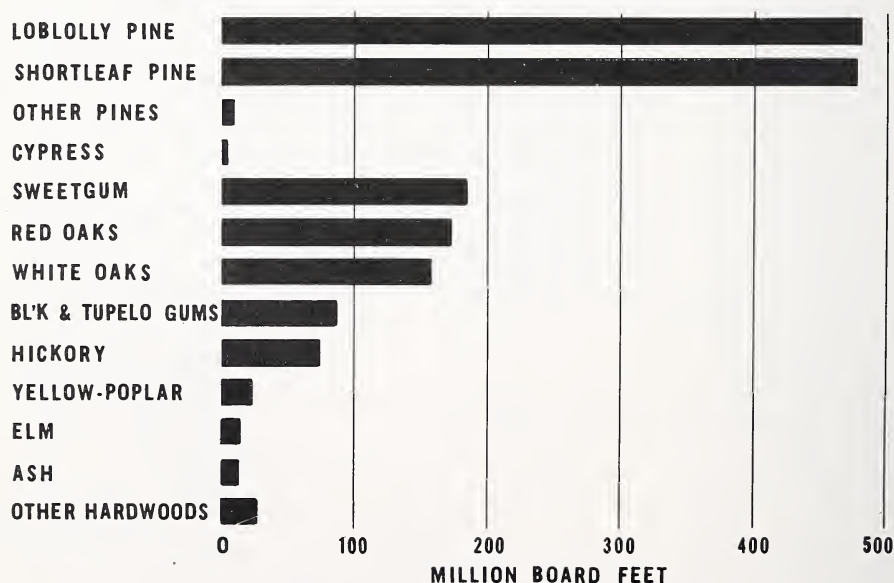


Figure 3.—Sawtimber volume by species.

³ County statistics on forest area, as well as other items of forest inventory, will be found on page 38.

⁴ All board-foot volumes in this report, unless otherwise indicated, are International $\frac{1}{4}$ -inch log rule, which approximates green-chain lumber scale.

Recent trends in growing stock are noteworthy. Softwood has increased 8 percent since the forest inventory of 1947. This is a reversal of earlier regional trends. The improvement, however, is strongly localized. Softwood volume has increased some 40 percent in Neshoba and Winston Counties, where the timber had been heavily logged by 1947. It has declined 12 percent in Kemper and Noxubee Counties. The upward trend in the western counties largely reflects expansion in pine management programs since World War II.

Hardwood inventory has declined 24 percent since 1947. The shrinkage is due partly to cultural operations aimed at reducing growing space occupied by unwanted hardwoods on areas more valuable for pine; partly to the sixfold increase in hardwood pulpwood production. It needs to be emphasized that hardwood pulpwood is generally cut from soft-textured species—sweetgum, for example—which reach their best development on the minor stream bottoms. The firm-textured species such as oak and hickory, which make up most of the upland hardwood volume, are little used for pulping.

Relative to its suitability for standard factory lumber, 16 percent of the hardwood sawlog material in the bottom lands and 11 percent in the uplands is of Grade 2 or higher—that is, logs clear enough to yield a substantial proportion of No. 1 Common and better lumber. The rest is in lower grade logs, which are generally less marketable. Of the volume below Grade 2, however, over half is in logs that are capable of yielding practical proportions of clear cuttings. Much of the pine grades low, too, and while this tends to limit returns to the timber grower and increase unit-costs of harvesting and processing to the timber operator, it does not ordinarily prevent profitable cutting.

Growth Now Exceeds Cut.—Essential to analysis of the forest resource is appraisal of the timber growth and the volume cut. Especially important in such an appraisal is the relationship of the growth and cut of sawtimber-size trees, which make up most of the annual harvest. Even pulpwood is taken largely from sawtimber trees.

Projection of growth rates from central Mississippi, within which the 4-county area lies, indicates that current net annual growth on growing stock totals 47 million cubic feet, of which the sawtimber component is 164 million board feet. Two-thirds of the sawtimber growth is pine. Softwood sawtimber growth is at least double the cut throughout the 4 counties. Growth of hardwood sawtimber in the 4 counties exceeds the cut by a much smaller margin—roughly a fifth. Moreover, the surplus of hardwood sawtimber growth is limited to Neshoba and Winston Counties. In Kemper and Noxubee, the annual cut of hardwood sawtimber exceeds the net growth.



There is little quantitative information on which to appraise the quality of the present hardwood growth. But as only a quarter of the hardwood sawtimber inventory is in trees more than 16 inches in diameter, it is apparent that most of the current growth is on trees that are still too small to yield much knot-free material for such uses as factory lumber and veneer. Furthermore, it is likely that the larger, better-formed hardwoods are being cut most heavily.

Except for quality hardwoods, however, the current situation with respect to growth and utilization of timber appears encouraging.

Timber Yields Can Be Doubled.—The forest soils of north central Mississippi have the capacity to produce a far greater volume of wood than they are currently growing. It can be reasonably assumed that with application of basic forestry practices on all commercial forest land, net annual growth in the 4-county area might eventually be raised from nearly 0.7 cord per acre to at least 1 cord. Under more intensive management potential yield might be raised to double the current growth. Over limited areas, even higher yields may be anticipated. On the Land Utilization Project between Ackerman and Louisville, for example, a loblolly pine plantation produced some 29 cords in about 16 years, or 1.8 cords per acre annually. An increased level of growth would, in the long run, enable the area to support much more forest industry than it now does. Essential to such forward movement is the planting of idle forest land and the removal from timber stands of those trees (principally cull hardwoods) that have little or no utility.

Planting southern pines is the surest and quickest way of rebuilding depleted stands on upland sites with inadequate seed sources. As one phase of the recent forest inventory, therefore, information was gathered on the area in need of pine planting.

The pine sites in the 4-county area—that is, forested uplands better adapted to growing pine than industrial hardwoods—total about 737 thousand acres, of which 416 thousand are in Kemper and Noxubee Counties, and 321 thousand in Neshoba and Winston. Some 280 thousand acres of the total have both inadequate pine stocking and an inadequate seed source. For full stocking of pine these acres will require planting or interplanting. Of the remaining 457 thousand acres regarded as pine sites, 288 thousand have at least 50 percent

← The inherent productivity of north central Mississippi's forest soils is attested by this stand of southern pine on the Henson Estate.

stocking of pine, and 169 thousand have enough seed trees to assure eventual natural restocking to pine.

In both the Neshoba-Winston and Kemper-Noxubee areas the proportion of pinelands that require planting is about the same, namely 38 percent. The area in need of such treatment is about 159 thousand acres in Kemper and Noxubee and 121 thousand acres in Neshoba and Winston. These estimates do not include fields that are no longer in cultivation but have not yet reverted to forest and on which planting may also be desirable for erosion control, watershed protection, or other reasons.

The survey revealed, too, that 610 thousand acres of pine sites have a hardwood problem in the sense that 20 percent or more of each acre is occupied by hardwoods. Generally speaking, the hardwoods on these sites are less desirable than pine. Most of them grow slowly, have short boles, and are apt to be limby or defective in one way or another. Such trees are hard to sell, and when they do find a buyer they bring much less than pine timber does. When freed from these competing hardwoods, young pines grow rapidly. Deadening (or selling whenever possible) such trees is one of the best investments that a forest landowner can make. Needs for hardwood control loom somewhat larger in the Kemper-Noxubee area (359 thousand acres) than in Neshoba and Winston Counties (251 thousand acres). Some 201 thousand of these 610 thousand acres are already adequately stocked with pine seedlings. Treating them first—before the young pines succumb to hardwood competition—will yield the earliest returns.

Of the 254 thousand acres in the 4-county area considered suitable for growing industrial hardwoods, such as the Pearl and Noxubee River bottoms, the survey found some 94 thousand acres noticeably encumbered with cull trees. That is, a sixth or more of these encumbered acres is dominated by culls—trees that are unmerchantable now or prospectively because of rot, defect, or species. Removal of this material would release established growing stock and create openings for reproduction.

Future timber yields could also be increased by strengthening and extending public fire-control facilities, and improving arrangements for detecting and taking prompt action against insect outbreaks.

Full and immediate attention to these remedial measures—that is, planting, timber stand improvement, and protection—would probably come close to doubling timber yields within the next two decades, if timber harvesting is carried out conservatively.

INDUSTRIAL USE OF TIMBER

The volume of timber cut annually for industrial use declined from 25.5 million cubic feet in 1946 to 23.5 in 1956. Partly because of the recent recession, the industrial cut is estimated to have dipped to about 21.1 million cubic feet in 1958. Softwood has consistently made up the bulk of the industrial wood and at the time of the latest inventory comprised nearly three-fifths of the cut.

Lumber Is Main Product.—Lumber has long been, and still is, the dominant forest product of the 4-county area. Cutting by large sawmills removed virtually all of the old growth prior to World War II. Immediately after the war the housing boom greatly expanded markets for all species of lumber, largely produced by portable mills. Since then, the number of sawmills has contracted sharply. In 1946, 144 sawmills were operating in the 4 counties. A canvass in March of this year found only 40.⁵

The fewer number of sawmills is partially reflected in timber harvest trends. The cut of sawlogs dropped 37 percent during the decade between the two most recent forest surveys. Softwood sawlog cut declined 25 percent, hardwood, 48 percent. The 1958 cut of sawlogs, over 50 million board feet, was 51 percent of the total 4-county cut of industrial wood (fig. 4).

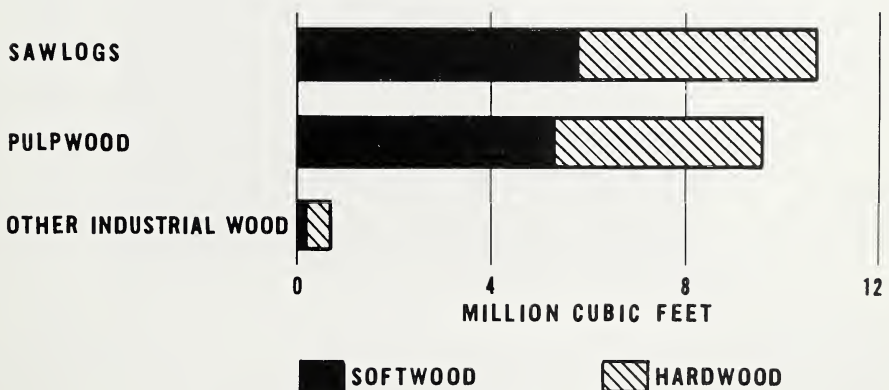


Figure 4.—Cut of industrial wood in north central Mississippi, 1958.

⁵ A 1959 listing of primary wood-using establishments in north central Mississippi will be found on pages 39-40.

A recent innovation at the larger sawmills is the use of mechanical log barkers and chipping equipment for making bark-free pulp chips. Such equipment permits fuller log use and thus enhances profit margins. Currently, five sawmills in north central Mississippi are shipping chipped slabs and edgings to pulp mills. Formerly these coarse residues were largely regarded as unavoidable waste.

Pulpwood Output Is Expanding.—Most notable of timber harvesting trends is the spectacular growth in pulpwood cutting. Pulpwood accounted for 9 percent of the industrial timber cut in north central Mississippi in 1946, for 28 percent in 1956, and for 45 percent in 1958. The rate of increase in the 4-county area has been double that of the State as a whole.

In response to the tremendous expansion of the pulp and paper industry both in and around Mississippi, pulpwood production in the 4 counties rose from 35,000 cords in 1946 to 95,000 cords in 1956. Output in 1958 reached an all-time high of more than 123,000 cords, of which two-thirds were pine (fig. 5).

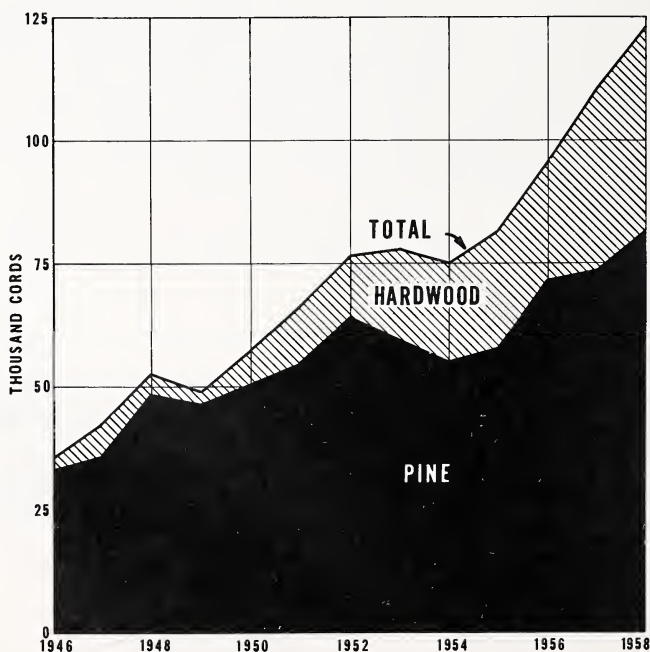


Figure 5.—Round pulpwood production in north central Mississippi, 1946-58.

At the A. DeWeese Lumber Company in Philadelphia, bark-free logs yield pulp chips as well as lumber. →



Eight pulp and paper companies draw bolts and chips from the area. The wood is hauled distances ranging from 15 to nearly 200 miles. Although no pulp mills are located within the 4 counties, strong competition for wood is offered by the several surrounding mills. Competition is certain to heighten in the near future as mills under construction or announced by two more companies go into production at Counce, Tennessee, and Columbus, Mississippi.

Specialties Are Locally Important.—Industrial wood other than lumber and pulpwood—poles, piling, posts, veneer, handle-stock, and the like—makes up about 4 percent of the annual timber cut, or some 0.8 million cubic feet. Six specialty plants are currently operating in the 4 counties—a package-veneer mill at Macon, hardwood dimension mills at Louisville and Philadelphia, and wood-preserving plants at Louisville, Macon, and Philadelphia (fig. 6).

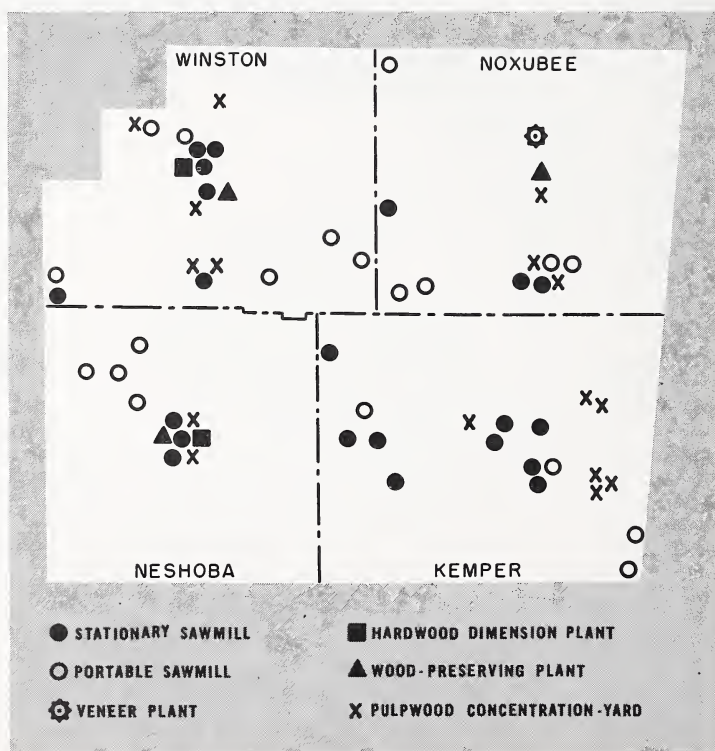


Figure 6—Location of primary forest-products plants and woodyards in north central Mississippi counties.

Sawmill residues, such as slabs and edgings, provide pulp chips by the carload.





Although the trend of future cutting in the area cannot be ascertained with certainty, general directions can be indicated. There does not appear to be any reasonable basis for concluding that the total harvest will increase markedly in the immediate future. As discussed earlier, regional hardwood volume declined heavily between the latest two forest surveys. Prolonged increases in the total hardwood cut, therefore, would further deplete the marketable hardwood inventory. As for softwoods, it has been indicated that volume has increased over the past decade. But the historic turn for the better took place at a relatively low level of productivity. Current softwood inventory exceeds the 1947 stand, but is still well below the volume tallied during the initial forest survey of 1935. Sharp increases in softwood cutting in the near future, therefore, would tend to reverse the current favorable trend. Too, on those properties where softwood volume is increasing, much of the timber is being reserved to improve stocking and thus build up future timber growth.

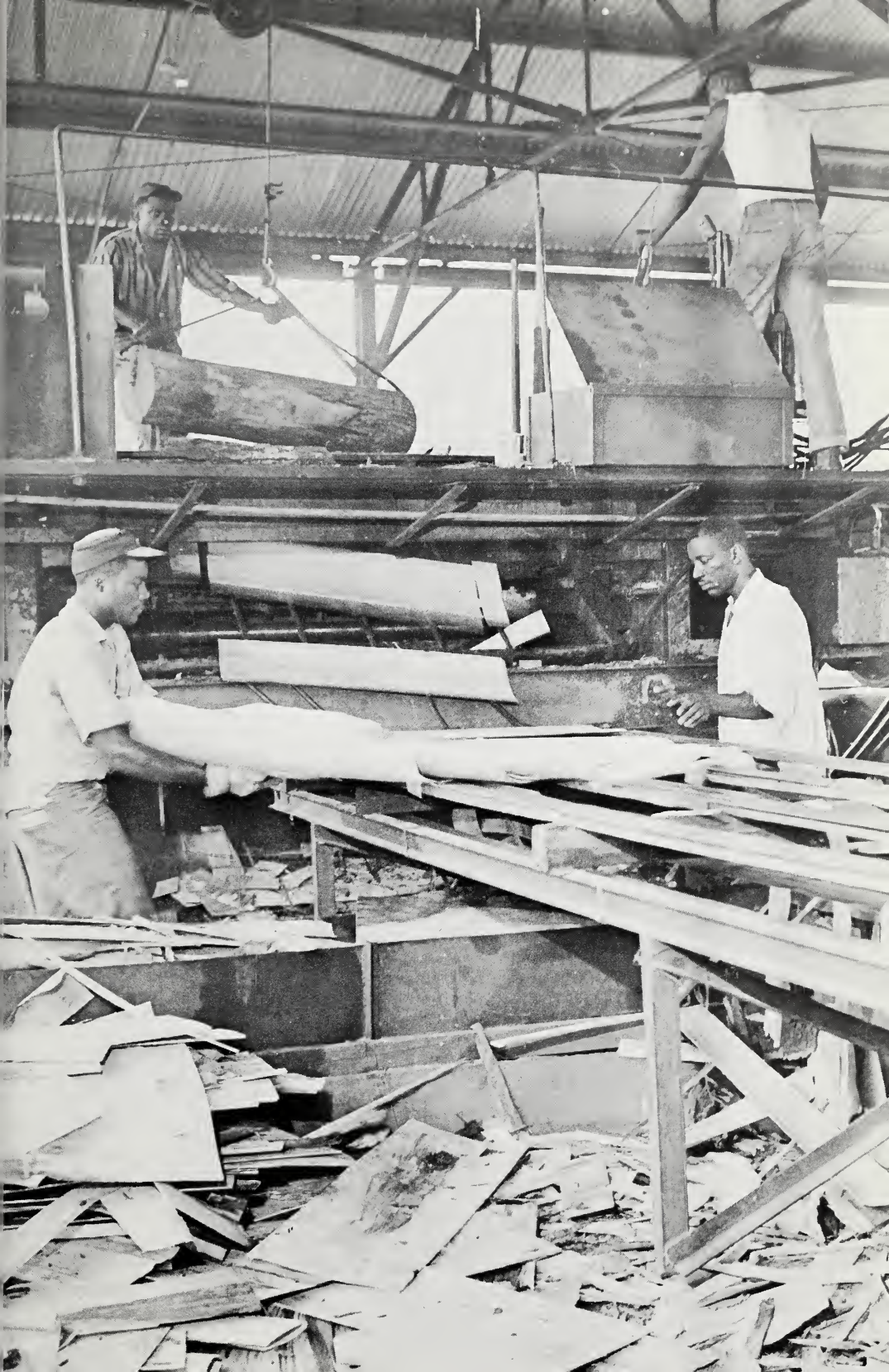
Projection of cutting trends for major products, however, suggests that during the next few years pulpwood is likely to make up a greater proportion of the volume that is harvested. Also, industrial wood may soon make up practically all of the hardwood cut, for rural residents are continuing shifting to nonwood fuels for cooking and heating. Some of the estimated 5 million board feet of hardwood sawtimber trees channelled into fuelwood and miscellaneous domestic uses in 1958 were no doubt suited for industrial usage.

PEOPLE AND FORESTS

Owners of Small Tracts Predominate.—A good deal of the timber situation traces back to private landowners, over 9,000, who hold nine-tenths of the land. Specifically, wood-using industries such as lumber and pulp companies own some 17 percent of the forest land, farmers 53 percent, and other private owners—businessmen, professional people, wage earners, and the like—about 22 percent.

Contrasts in average pine stocking are somewhat indicative of relative forest management efforts among the several broad classes of private ownership. It was noted earlier that north central Mississippi is essentially a pine-producing region—that is, three out of every four forest acres are more valuable in pine than hardwood. Efforts at

Soft-textured hardwoods, like sweetgum, are converted into package veneer by the General Box Company at Macon. →



controlling hardwood encroachment and improving pine volume have been most effective on forest-industry holdings, which are largely under supervision of professional foresters. On these holdings, for example, growing stock averages 880 cubic feet per acre, of which some three-fifths is pine. On private nonindustrial holdings, other than farmer-held, growing stock averages about 420 cubic feet per acre, half pine. Farmers' woodlands average nearly 470 cubic feet per acre, but only a third is softwood (fig. 7).

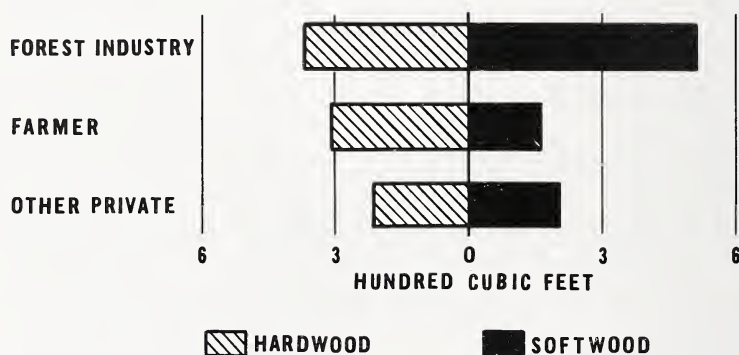


Figure 7.—Average volume per acre in north central Mississippi, by type of ownership.

Most of the private nonindustrial forest is in ownerships of less than 5,000 acres. To supplement data regularly collected as one phase of the forest survey, a special study of small woodland owners in the area was undertaken. Respondents were selected from owners on whose lands the Southern Forest Survey maintains permanent timber-sampling points, which are systematically located throughout the area.

It was found that small-tract owners are about equally divided between farmers and nonfarmers. The median forest acreage held by these owners is about 130. Nearly half of the owners reported gross annual incomes of less than \$5,000.

Over 40 percent of the respondents had made some kind of forestry effort—planting trees, for example, or deadening cull hardwoods. Though the effort was often limited, at least in terms of acres, it is indicative of an awakening interest in forest improvement.

Loblolly pine planted in 1940 by Marshall Rivers of Neshoba County. The stand has already been thinned twice for pulpwood; the next cutting is scheduled for about 1964.





An encouraging number of small-tract owners—about one in four—had availed themselves of some professional forestry assistance. Indeed, most of these owners had made use of professional help on more than one occasion. For those who actively seek it, competent professional guidance is locally obtainable. The Mississippi Forestry Commission maintains a forestry staff at Philadelphia. Technical assistance is also available from the Soil Conservation Service and the State Extension Service. At least three pulp companies and two other wood-using concerns have foresters who will provide some technical help without charge. One of the latter concerns supports a comprehensive management program for interested timber owners, presently numbering about 100 in the 4-county area.

But what about the bulk of the small-tract respondents—the ones who have not yet availed themselves of professional guidance? A few believe they lack enough acreage to justify management. About one in six also indicated that they are simply “not interested in forestry.” Many of these respondents—some 40 percent—strongly implied that they know enough about the woods so that they do not need professional help; in view of the resource trends discussed earlier, this seems highly improbable. Rather, it may be assumed that these owners do not have a fully adequate concept of what forest management involves and are unaware of the yields that may be realized through skillful application of scientific forestry principles. In brief, many landowners apparently do not recognize that there is a way of managing their forest land that is superior to their present methods. This suggests a big job ahead in informing landowners about the value of forestry before they may be willing to accept help, even if freely offered.

Aside from various technical-assistance programs, the other major public activity affecting forestry relative to small landowners is the Agricultural Conservation Program (ACP). Beginning in 1936 Congress authorized this cost-sharing program of soil-building and water-conserving practices.

In the 4-county area the ACP will share with landowners up to 65 percent of the cost of planting trees, or of carrying out timber stand improvement (TSI) measures such as girdling cull hardwoods. Current maximum per-acre rebates reported by local ACP offices are: \$6.40 for TSI; \$7.50 for machine planting; and \$9.00 for hand planting.

About a quarter of the small-tract respondents had received ACP forestry payments, mostly for tree planting. Of those receiving pay-

ments, the majority had also made use of a forester at one time or another. It is likely that these owners initially availed themselves of ACP payments upon the forester's recommendation. Among non-users, about 20 percent were unaware that payments are available. An even larger number, almost 40 percent, reported a lack of time to do the required work. The latter response also suggests lack of program knowledge. Little time is actually required on the owner's part—even the field work may be contracted. For the majority of non-users, therefore, responses might be reasonably interpreted as reflecting inadequate knowledge regarding ACP benefits and eligibility, relative to its forestry aspects. Again, it reinforces the earlier conclusion as to the magnitude of the educational task that needs doing among woodland owners. Though both timber industries and public agencies offer forestry guidance to local landowners, efforts in this direction should be substantially bettered.

Forest Development: How Much Will It Cost?—Under the Agricultural Conservation Program, landowners in the 4 counties planted trees on 1,444 acres in 1958 and did initial stand-improvement work on 4,390 acres. While no data are available on the total acreage in the 4-county area on which such measures were carried out, it is conservatively estimated to be at least double or perhaps even triple the above figures. This added acreage would include public lands, forest industry holdings, and other nonindustrial holdings on which no ACP payments were received for the work done.

Information provided by local industrial and public foresters suggests that average costs for planting in the 4 counties are \$15 per acre, and for TSI, \$5.⁶ Based on the acreages in need of such treatment as revealed by field surveys,⁷ and assuming the above average costs, an approximation of total required expenditure is \$4,200,000 for forest planting, plus \$3,520,000 for initial improvement of timber stands.

These estimates do not include additional fire, insect, and disease prevention and control measures that may be required under more intensive management. These activities are largely directed by the Mississippi Forestry Commission.

Of the protection measures, installation of public fire-control facilities in Neshoba, Noxubee, and Winston Counties is a necessary first step to forest development. For the 12-month period preceding July 1, 1959, it is estimated that about 1.7 percent of the forest area

⁶ Costs are based upon use of experienced woods crews. Reported range of TSI costs are \$1 to \$8 per acre, depending on stand conditions. Planting costs include seedlings furnished by the Mississippi Forestry Commission at \$4.80 per thousand.

⁷ See detailed discussion in earlier section titled, "Timber yields can be doubled."

was burned in these counties. In Kemper County, where the forests are under protection of the Mississippi Forestry Commission, scarcely 0.3 percent of the forest acreage burned over during the same period. That the area burned in the other 3 counties was not even greater is mainly attributable to a number of industrial landowners who made their fire-fighting facilities available to others.

Institution of county fire control requires local approval of landowners, as they are assessed protection costs of 2 cents per acre annually for timberland and uncultivable land. Voters in Winston and Neshoba Counties recently approved county forest fire protection, but funds have not yet been locally allocated for installation of facilities. In protected counties, local funds are supplemented with State and Federal monies. Total fire-protection expenditures generally average 12 to 14 cents per acre for the initial year in protected counties, and 6 to 9 cents thereafter.

It is evident that a sizeable capital outlay will be necessary to upgrade the resource. Of the \$7.7 million indicated for planting and TSI, it is presumed that \$1.2 million will be expended on lands of public agencies and wood-using industries.

In essence, the above total is predicated upon spending about \$8 per acre on the typical woodland for planting and release of seedlings from worthless overtopping hardwoods. Naturally, additional costs will be incurred over a period of years for such items as cruising, marking, supervision, management plans, and protection. The added costs for out-of-pocket expenses and labor might average as much as a dollar per acre annually. What returns might landowners expect from investment in intensive management?

It can be assumed that the average forest holding will be retained in individual or family ownership for a considerable time. Thus, land costs and taxes do not enter into appraisal of management opportunities—only the extra costs of growing timber and the returns therefrom. Costs and returns will of course vary somewhat with size of holding, differences in initial stocking, and site quality. But at least one indication of anticipated returns is suggested by a study tract maintained by the Forest Service in southern Arkansas, an area similar in productive capacity to north central Mississippi. This tract is the oldest intensively managed area in the Midsouth for which detailed records are available. When management began the tract

Too much of north central Mississippi's future payroll still goes up in smoke. This promising young pine plantation was killed by wildfire in July 1959.





contained about 2 MBF (Doyle rule) of pine per acre, as well as numerous low-value hardwoods. Over a 15-year period, stumpage sales have paid all management expenses and returned \$4 per acre annually (adjusted to a current price basis). In addition, the timber stand has been markedly improved in structure. The growing stock has increased in worth by over \$6 per acre per year. These values would represent an annual compound rate of return of approximately 6 percent from investment in the management program. In terms of future opportunities, the latter estimate is probably conservative. In appraising management possibilities, landowners must also consider future changes in dollar values, wood demand, and timber growing techniques. The net effect of such changes could well be a relative gain in timber receipts as against timber growing costs.

ACP Aids Forest Betterment.—By reducing owner's out-of-pocket expenses, the ACP is instrumental in speeding forest improvement. ACP funds totaling \$33,690, or 7 percent of total ACP allocation, were paid out by the 4 counties in 1958 for tree planting and timber stand improvement. In the same year, neighboring Lafayette County used 49 percent of its total ACP allocation for forestry practices. If the 4 north central counties had apportioned their total allocation similarly, \$225,145 would have been available for cost sharing of approved forest treatments.

Tree planting has received further impetus during the past few years from the Soil Bank Conservation Reserve Program, a part of the Agricultural Act of 1956. This program established a system of cost-sharing, annual land payments, and technical guidance to enable farmers to undertake practices—tree planting, for example—that conserve soil, water, and wildlife on land withdrawn from cultivated crops. In 1958 about 1,150 acres in the 4 counties were planted to pine under this program, and nearly \$12,000 was paid out to help participating farmers defray the costs. Additionally, these participants are receiving an annual land rental of \$9.50 per acre for ten years from date of planting. Unless the authority is extended, new Soil Bank planting contracts will not be accepted after 1960.

MARKETING OF FOREST PRODUCTS

Markets Are Varied.—Demand for timber is heavy and outlets numerous in north central Mississippi. The lumber and pulpwood industries provide the principal markets. These industries, together with a few manufacturers of other products such as poles, veneer, and

Released from overtopping hardwood, these young pines on the Chris Allen tract near Philadelphia are now growing rapidly.





handle-stock, utilize about 90 percent of the timber harvest. The rest goes into fuelwood and other domestic uses.

Lumber varies widely in species, grade, seasoning, degree of manufacture, and value. Marketing methods, therefore, vary according to the operations necessary to assemble, prepare, and sort the material for use. Rough unseasoned mill-run lumber from small sawmills may be sold directly to local users for farm repairs and construction, uses in which requirements are not exacting. To reach national markets, rough lumber usually must be further seasoned, graded, sorted, and sometimes planed. Since the small mill is generally equipped only for rough sawing, the lumber passes from it to concentration yards and large mills that provide the necessary skills, equipment, and finances. From these agencies, it goes through channels leading to the ultimate user or, particularly with hardwood, to furniture and similar industries for further manufacture.

Few sawmills have precise specifications for their raw timber needs. Ten inches in diameter at breast height might be taken as a rough minimum tree diameter for pine sawtimber. Quality, though seldom a barrier to utilization of pines, nevertheless influences the prices paid for stumpage. Prices are also affected by accessibility and competition. Common pine stumpage sells for about \$30 to \$35 per MBF (Doyle rule), while better material may bring \$40 or more per MBF.

Commercial hardwood mill operators will accept some logs as small as 10 inches in diameter and 8 feet in length, provided that defects are few. But preferred logs are at least 12 inches in diameter and 12 or 14 feet in length. With few exceptions, therefore, a marketable hardwood sawtimber tree must be at least 15 inches in diameter and have a butt log capable of yielding clear cuttings. Opportunities for sale of low-grade hardwood sawtimber—that is, small logs, or large, knotty logs usable only for rough construction lumber—are more limited. In the current market, better quality hardwood suitable for factory lumber may bring from \$12 to \$20 per MBF (Doyle rule) on the stump. Hardwood that runs heavily to logs of minimum merchantability may bring scarcely \$8 per MBF (Doyle rule) stumpage, when a buyer can be found.

Pulpwood demand is sizable in the 4 counties. It is certain to increase in view of announced industry expansion. Eight pulp companies are currently competing for local wood. Wood deliveries to

*Mechanized concentration yards speed wood deliveries to
pulp mills.*





pulp mills are coordinated through a system of mechanized wood-yards and rail sidings at 16 strategic locations. Cordage is shipped to Alabama and Louisiana, as well as to mills within the State.

Pulpwood is cut into 5-foot lengths, with stated maximum diameters of 18 inches and minimum diameters of 4 inches. The standard cord is the accepted unit of measure, and prices are adjusted for differences in length of bolts. Pine cordage presently brings some \$5 on the stump. Hardwood, largely soft-textured species like gum, is about half the price of pine. Delivered at local wood-yards, pulpwood is worth about \$13 per cord for pine, \$9 for hardwood.

Local outlets for products other than sawlogs and pulpwood are offered by hardwood dimension mills at Louisville and Philadelphia, which utilize hickory and gum; a package-veneer plant at Macon that accepts soft-textured hardwoods; and several plants using preservatives to treat wood products, such as pine poles, posts, and piling. Specifications for hardwood dimension and veneer approximate those for better-quality factory logs, but shorter lengths are utilized. Poles are generally marketed under specifications developed by the American Standards Association; piling under specifications of the American Society for Testing Materials.⁸

Prices for specialties are generally quoted at local delivery points for rough-cut products measured in standard units. Knot-free gum blocks (9 inches and up in diameter) for furniture stock, for example, currently bring about \$22 per cord; clear hickory logs (12 inches and up in diameter) for dimension use, about \$55 per MBF (Doyle rule); package-veneer logs (9 inches and up in diameter) are worth about \$50 per MBF (Doyle rule). Common pine posts (7 feet long, 3 to 5 inches in diameter) average some 14 cents apiece. Pine poles for distribution lines in the widely used ASA Class-5, 35-foot length, presently bring at least \$5 each. Piling, production of which is largely a special-order business, may bring about 25 cents per lineal foot.

Most Owners Sell Stumpage.—Because of the large number of forest owners and the small size of the average forest holding, the stumpage market is a composite of many small local transactions. The timber owner entering such a market is often hampered by lack of experience and information.

⁸ For specifications of poles and piling see Southern Forest Experiment Station Occasional Paper 153.

The American Creosote Works at Louisville ships southern pine poles to national markets. →



Timber from most sellers enters the market in the form of stumpage, but some sell cut products. Interested landowners can usually arrange to have local contractors, for example, cut and haul logs for about \$20 per MBF (Doyle rule). Logs are generally scaled at the mill yard by the buyer and paid for at a prearranged price per unit of measure. The usual practice in such transactions is for the buyer to make out two checks—one to the contractor for his fee, another to the seller for the residual amount.

With timber demand strong in the 4 counties, even small volumes are marketable. Stumpage sales of 50 cords of pulpwood or 20,000 board feet of sawlogs are not uncommon. Even smaller amounts are salable, especially where the landowner performs or contracts the cutting.

Improving Markets.—The factor that overshadows all other aspects of the marketing system is that timber owners are not realizing the potential production of their forest land. Narrowing the gap between what foresters know about timber growing and what the average landowner practices will require more technical assistance to landowners.

It would be helpful if information on forest products markets could be kept current by service agencies. Advantages of selling timber by measurement should be stressed, and known methods of measuring and grading widely demonstrated.

Full use of the available resource also calls for putting each tree harvested, and each part of each tree, into the highest use it can satisfy. If some of the added returns possible from improved utilization accrue to landowners, their incentives for growing timber will be increased. A recent study of hardwood logging operations by the Carbondale (Illinois) Research Center of the Forest Service illustrates the added returns possible from better utilization.⁹ It was found that if the trees studied had been bucked for optimum grade, the timber operator's profit margin would have been increased about \$6.50 per MBF. The study disclosed that major reasons for loss of quality and volume were: woods crews were not familiar with log grades, trees were cut with stumps higher than standard or were jump-bucked unnecessarily, and merchantable top material was left lying in the woods.

⁹ Increase your profit in the woods. U. S. Forest Serv., Cen. States For. Expt. Sta. Tech. Paper 151. 1956.

Small sawmills offer outlets for locally grown stumpage. →



In putting timber to its most profitable use, sellers frequently have the option of selling pine stumpage as sawtimber or pulpwood. A study by the Southeastern Forest Experiment Station has shown that comparative prices between these products may be determined by comparing two ratios, one of which is a characteristic of the timber to be sold and the other a market condition.¹⁰ The first is the ratio of cords/MBF; the second is the ratio of price per MBF to that of pulpwood per cord. If the price ratio is greater than the volume ratio, a sawtimber sale is more attractive to the seller, and if the price ratio is less, a pulpwood sale is preferred. Thus, in a stand where the trees to be sold have a ratio of cordwood volume to board-foot volume of 3 cords for each thousand board feet of sawtimber, it is apparent that when pulpwood is selling for \$5 per cord, an equivalent sawtimber bid above \$15 would be more attractive. Where the small quantities of cordwood in the tops of sawtimber trees can be marketed for pulpwood, borderline cases can best be decided in the favor of sawtimber. In the case of more limited markets—poles and piling, for example—sellers with timber that may qualify for these products should contact buyers, learn their specifications, and then look over their timber again. If there are a sufficient number of trees that qualify, it will usually be most profitable to sell the trees in such markets.

Efforts to attract secondary wood-using industries that can remanufacture local lumber into consumer goods might well be intensified. Timber growth plus the dwindling fuelwood demand is making more and more low-grade hardwood available for industrial use. Local plants might make parts for furniture and fabricated products. Small furniture plants, for example, could use local lumber in conjunction with quality material shipped in from other areas. Plants using small hardwood dimension stock might produce chair rounds, play pens, toys, and other items. If all avenues to more effective utilization of surplus hardwoods are fully explored, the market situation will be greatly helped. This would in turn stimulate the practice of forestry.

¹⁰ Comparative stumpage prices. U. S. Forest Serv., Southeastern For. Expt. Sta., Sta. Paper 16. 1952.



SUMMARY

Forest resources can be the basis of a flourishing local economy. Translating the capability into reality depends partly upon over-all public and private forestry programs. To increase the tempo of forestry efforts will require better ways of adapting systems of forest management to the needs of small landowners with limited capital, more efficient methods of timber utilization and marketing, and outlets for material currently unmerchantable.

What needs to be done within the 4 counties to realize the potential benefits? It is clear that more effort must go into rehabilitation of forest resources. To carry out prescribed land treatments on many small tracts in the 4 counties will require professional management, together with financial assistance in one form or another.

Land treatments recommended are to:

Plant pines on 280,000 acres of forest land that are now inadequately stocked with pine and do not have enough seed trees to assure eventual natural restocking.

Undertake timber stand improvement on 610,000 acres of forest land that is more valuable for pine than hardwood.

Remove cull timber on 94,000 acres of forest land that is best suited to growing industrial hardwood.

Install public fire-control facilities in Neshoba, Noxubee, and Winston Counties.

Harvest all timber in such a way as to put the forests in condition for high, continuous yields of wood crops.

Some of the benefits of forest development will be immediate and tangible. Thus, the proposed restoration work would provide at least 500 thousand man-days of local employment. An increase in forest land values is another likely benefit. Lands supporting small, defective timber would increase sharply in market value with planting and timber stand improvement—and this before a single post or stick of pulpwood is cut.

These immediate benefits would be incidental to, and small in comparison with, the ramified effects of expansion of basic industries. Some idea of these ultimate effects may be secured from factors derived by the New Jersey Development Council. According to the Council, 4,000 new jobs in a basic industry add 28,000 people to the local population. Taxable evaluation expands by \$50 million, 660 new stores and shops open for business, and there are another 6,400

cars on the road. Whether or not the New Jersey estimates apply precisely to the 4 counties, it seems likely that the population decline would be reversed, and a larger population would enjoy a higher per-capita income and better community services than at present.

How rapidly the forest potential is achieved hinges upon the intensity of developmental efforts; future changes in the timber supply and demand situation; and the period required to produce salable wood of desired species, size, and quality on the many acres of understocked forest land. In large measure, the capital needs for forest development may have to come from outside the area, but much of the leadership should come from within. The outlook for future timber markets is excellent and the area has outstanding natural and economic advantages for producing quality timber. The costliest alternative will be delay or inaction.



APPENDIX

Forest Statistics ¹¹

Table 1.—*Land area and commercial forest by county*

County	All land	Commercial forest	
	Thousand acres	Thousand acres	Percent
Kemper	484.5	332.3	68.6
Neshoba	363.5	199.6	54.9
Noxubee	444.8	214.4	48.2
Winston	387.8	244.2	63.0
All counties	1,680.6	990.5	58.9

Table 2.—*Growing stock volume ¹ by county*

County	Total	Softwood	Hardwood
	— — — — Million cubic feet — — — —		
Kemper	143.9	69.3	74.6
Neshoba	135.4	56.2	79.2
Noxubee	102.8	52.6	50.2
Winston	154.2	62.8	91.4
All counties	536.3	240.9	295.4

¹ Includes sound, well-formed trees at least 5.0 inches in diameter at breast height.

Table 3.—*Sawtimber volume ¹ by county*

County	Total	Softwood	Hardwood
	— — — — Million board feet ² — — — —		
Kemper	380.2	255.6	124.6
Neshoba	471.2	220.2	251.0
Noxubee	342.7	233.0	109.7
Winston	524.2	261.3	262.9
All counties	1,718.3	970.1	748.2

¹ Includes softwoods at least 9.0 inches in diameter at breast height; hardwoods, 11.0 inches.

² International ¼-inch rule.

Table 4.—*Sawtimber volume by tree diameter and county*

County	All diameter classes	Softwood		Hardwood	
		9.0-14.9 inches	15.0 inches and up	11.0-14.9 inches	15.0 inches and up
		— — — — Million board feet ¹ — — — —			
Kemper	380.2	160.5	95.1	82.7	41.9
Neshoba	471.2	184.4	35.8	150.5	100.5
Noxubee	342.7	155.3	77.7	69.9	39.8
Winston	524.2	181.3	80.0	136.3	126.6
All counties	1,718.3	681.5	288.6	439.4	308.8

¹ International ¼-inch rule.

¹¹ Statistics given here are taken from most recently published data of the Forest Service. Statistical analysis indicates the sampling error to which the estimates may be liable two chances out of three are plus or minus 1.3 percent for the estimate of total forest area, 5.3 percent for total cubic volume, and 7.3 percent for total board-foot volume.

Primary Forest-Products Establishments In Kemper County

Type of establishment	Name of owner or company	Location ¹
Stationary sawmill	Monroe Dean	Moscow
Stationary sawmill	D. L. Fair Lumber Co.	De Kalb
Stationary sawmill	J. A. McDade	Electric Mills
Stationary sawmill	J. E. McDonald	Preston
Stationary sawmill	Barnett Company	Moscow
Stationary sawmill	T. E. Darnell	Moscow
Stationary sawmill	Fisher Brothers Lumber Co.	De Kalb
Stationary sawmill	R. L. Ishee	Porterville
Stationary sawmill	Robert Ridgon	Porterville
Portable sawmill	Pat Griffin	Porterville
Portable sawmill	W. N. Johnson	De Kalb
Portable sawmill	Earle Lee Steadman	Preston
Portable sawmill	Nolan Martin	Porterville
Pulpwood concentration-yard	Richton Tie & Timber Co.	Porterville
Pulpwood concentration-yard	Shubuta Tie & Timber Co.	Scooba
Pulpwood concentration-yard	Culpepper Woodyard	De Kalb
Pulpwood concentration-yard	O. W. Hall	Porterville
Pulpwood concentration-yard	W. E. Batty	Scooba
Pulpwood concentration-yard	Fred Rogers	Porterville

¹ Indicates community nearest to the establishment. Location of portable sawmills is as of March 1959.

Primary Forest-Products Establishments In Neshoba County

Type of establishment	Name of owner or company	Location ¹
Stationary sawmill	A. DeWeese Lumber Co.	Philadelphia
Stationary sawmill	Molpus Lumber Co.	Philadelphia
Stationary sawmill	Deemer Lumber Co.	Philadelphia
Portable sawmill	R. L. Ferguson	Arlington
Portable sawmill	Sam Marshal	Arlington
Portable sawmill	Paul Woods	Arlington
Portable sawmill	Harold Willis	Philadelphia
Wood-preserving plant	A. DeWeese Lumber Co.	Philadelphia
Hardwood dimension mill	A. DeWeese Lumber Co.	Philadelphia
Pulpwood concentration-yard	Richton Tie & Timber Co.	Philadelphia
Pulpwood concentration-yard	P. L. Jordson & Sons	Philadelphia

¹ Indicates community nearest to the establishment. Location of portable sawmills is as of March 1959.

Primary Forest-Products Establishments In Noxubee County

Type of establishment	Name of owner or company	Location ¹
Stationary sawmill	O. B. Persons Lumber Co.	Shuqualak
Stationary sawmill	J. L. Jenigen	Mashulaville
Stationary sawmill	R. E. Prince	Shuqualak
Portable sawmill	E. S. Kelly	Shuqualak
Portable sawmill	Quenton Pierce	Shuqualak
Portable sawmill	Bill Hayne	Brookville
Portable sawmill	Emmitt Butler	Gholson
Portable sawmill	W. P. Beasley	Gholson
Veneer plant	General Box Company	Macon
Wood-preserving plant	Woody Jones Creosote Plant	Macon
Pulpwood concentration-yard	Shubuta Tie & Timber Co.	Shuqualak
Pulpwood concentration-yard	Kelly's Woodyard	Shuqualak
Pulpwood concentration-yard	R. N. Henley	Macon

¹ Indicates community nearest to the establishment. Location of portable sawmills is as of March 1959.

Primary Forest-Products Establishments In Winston County

Type of establishment	Name of owner or company	Location ¹
Stationary sawmill	D. L. Fair Lumber Co.	Louisville
Stationary sawmill	Barrier & Neeks	Noxapater
Stationary sawmill	Odie Commer	Plattsburg
Stationary sawmill	Ross Burton	Louisville
Stationary sawmill	Sanford Brothers	Louisville
Stationary sawmill	Bill Rieves	Louisville
Portable sawmill	F. W. Vowell	Vowell
Portable sawmill	Arthur Davis	Louisville
Portable sawmill	William Rhodes, Jr.	Louisville
Portable sawmill	Sam Triplet	Fern Springs
Portable sawmill	W. E. Robertson	Noxapater
Portable sawmill	Howard Hurt	Fern Springs
Wood-preserving plant	American Creosote Works, Inc.	Louisville
Handle-stock plant	B. E. Watson & Sons	Louisville
Pulpwood concentration-yard	H. B. Maxey	Noxapater
Pulpwood concentration-yard	J. D. Wilks Woodyard	Louisville
Pulpwood concentration-yard	John Carter	Noxapater
Pulpwood concentration-yard	Jimmie Lampley	Louisville
Pulpwood concentration-yard	C. B. Ray	High Point

¹ Indicates community nearest to the establishment. Location of portable sawmills is as of March 1959.

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